

Lecture Series Secretary
von Karman Institute for Fluid Dynamics
72 Chaussée de Waterloo
B-1640 Rhode-St-Genèse
Belgium

(Please correct your address if necessary)



INTRODUCTION TO COMPUTATIONAL FLUID DYNAMICS

January 28 - February 1, 2008



VON KARMAN INSTITUTE FOR FLUID DYNAMICS

INTRODUCTION

The objective of this course is to provide an elementary tutorial presentation on computational fluid dynamics (CFD), emphasising the fundamentals and surveying a variety of solution techniques whose applications range from low speed incompressible flow to hypersonic flow. The course is aimed at persons who have had little or no experience in this field, both recent graduates as well as professional engineers, and will provide

- an insight into the philosophy and power of CFD
- an understanding of the mathematical nature of the fluid dynamics equations
- a familiarity with various solution techniques

TIMETABLE

MONDAY JANUARY 28, 2008

08:45	Registration
09:15	Welcome Address
09:45	Basic philosophy of CFD <i>Prof. J.D. Anderson, Jr., University of Maryland, USA</i>
11:15	Forms of the governing equations particularly suited for CFD : non-conservative, conservative, flux vectors <i>Prof. J.D. Anderson, Jr.</i>
14:00	Mathematical properties of the fluid dynamic equations : influence on appropriate numerical techniques; stability considerations <i>Prof. J.D. Anderson, Jr.</i>
15:45	Mathematical properties of the fluid dynamic equations (continued) <i>Prof. J.D. Anderson, Jr.</i>
17:00	Reception

TUESDAY JANUARY 29, 2008

09:00	Discretisation of partial differential equations : finite differences <i>Prof. J.D. Anderson, Jr.</i>
11:00	Discretisation of partial differential equations (continued) <i>Prof. J.D. Anderson, Jr.</i>
14:00	Transformation and grids <i>Prof. J.D. Anderson, Jr.</i>
15:45	Explicit methods for inviscid and viscous compressible flows <i>Prof. J.D. Anderson, Jr.</i>

WEDNESDAY JANUARY 30, 2008

09:00	Explicit methods (continued) <i>Prof. J.D. Anderson, Jr.</i>
11:00	Implicit time dependent methods for inviscid and viscous compressible flows <i>Prof. G. Degrez, von Karman Institute for Fluid Dynamics, Belgium</i>

At the conclusion of the course, an attendee will be well prepared to understand the literature in this field, to follow more sophisticated state-of-the-art lecture series, and to begin the application of CFD to his or her special areas of concern. While the techniques to be discussed will be applicable to all fields of fluid dynamics, the lecturers and the majority of examples presented will carry a strong flavor of aeronautics.

The Director of this Lecture Series is Professor G. Degrez of the von Karman Institute.

Please pass this announcement to someone who may be interested if you are unable to attend the Lecture Series yourself

14:00 Implicit methods (continued)

Prof. G. Degrez

15:45 Implicit methods (continued)

Prof. G. Degrez

THURSDAY JANUARY 31, 2008

9:00 Implicit methods (continued)

Prof. G. Degrez

11:00 Finite volume methods

Prof. E. Dick, University of Gent, Belgium

14:00 Finite element methods

Prof. E. Dick

15:45 Finite element methods (continued)

Prof. E. Dick

FRIDAY FEBRUARY 1, 2008

9:00 Aspects of CFD computations with commercial packages

Prof. J. Vierendeels, University of Gent, Belgium

11:00 Boundary layer equations and methods of solution

Prof. R. Grundmann, TU Dresden, Germany

13:45 Boundary layer equations (continued)

Prof. R. Grundmann

15:00 VKI Bus departure

PRACTICAL INFORMATION

Lunch will be taken from 12h30 to 13h45, Friday included.
Coffee breaks are scheduled each morning and afternoon.
The afternoon sessions will finish around 17h00.